Speech and language dysfunction in childhood epilepsy and epileptiform EEG activity

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I Rejnö-Habte Selassie G, Jennische M, Kyllerman M, Viggedal G, Hartelius L. Comorbidity in severe developmental language disordes: neuropediatric and psychological considerations. *Acta Paediatrica* 2005; 94: 471-478.

II Rejnö-Habte Selassie G, Viggedal.G, Olsson I, Jennische M. Speech, language and cognition in preschool children with epilepsy. *Developmental Medicine and Child Neurology* 2008; 50: 432-438.

III Rejnö-Habte Selassie G, Olsson I, Jennische M. Patterns of language and auditory dysfunction in 6-year-old children with epilepsy. *Uppsala Journal of Medical Sciences* 2009; 114: 82-89.

IV Rejnö-Habte Selassie G, Hedström A, Viggedal G, Jennische M, Kyllerman M. Speech, language and cognitive dysfunction in children with focal epileptiform activity. A follow-up study. Submitted.

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Abstract

In severe childhood language disorder, concomitant dysfunction in other areas may be present. There are indications that epileptiform EEG activity and epilepsy may influence speech and language development, but this relationship is poorly understood. The objective of this thesis was to investigate the relationship between speech and language disorder in children and other neurodevelopmental dysfunctions and, in particular, to study the influence of epilepsy and epileptiform activity on speech and language.

In the first study, the medical records of 28 children with persistent speech and language disorder were reviewed in terms of speech and language development, psychological assessments and medical history and co-occurrence with other dysfunction was analysed. The second and third studies investigated speech, language, auditory and cognitive functions in 20 children from a regional cohort of six-year-olds with epilepsy and normal intelligence. They were compared with 30 reference children without epilepsy. The individual patterns of dysfunction were analysed with respect to some epilepsy variables. In the fourth study, 19 individuals with sleep-activated epileptiform activity and language dysfunction in childhood were followed up with assessments for speech, language, auditory and cognitive functions and EEG registrations. Their medical history and earlier assessments were reviewed. The results of the follow-up assessments were analysed with respect to both the pattern of earlier language development and some prognostic factors.

The first study revealed that a higher percentage of children with language disorder had epilepsy and epileptiform activity than children in the normal population and a complex pattern of co-occurrence with other developmental dysfunctions was present. Diverse speech and language profiles and intellectual profiles were found. In the second and third studies, children with epilepsy but normal intelligence displayed an expressive language dysfunction. Language dysfunction was found in children with a variety of epileptic conditions, but it was worse in those with epileptiform activity in the left hemisphere. The fourth study revealed diverse long-term outcomes for children with language dysfunction and epileptiform activity and no obvious differences were found between those with slow language development and those with a deterioration in previously acquired language ability. The amount of epileptiform activity indicated a poorer outcome.

Keywords: auditory ability, cognition, co-morbidity**,** epilepsy, epileptiform activity, follow-up, Landau Kleffner syndrome, language disorder, neurodevelopmental dysfunction, speech disorder

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